

The first 45 pages of the flora are devoted to a description of the study area and a survey of the history of botanical exploration in the region. Included are details of physiographic and geological features, a listing of plant communities with a floristic analysis, and a partial check-list of plants that occur on the summits of five or more peaks both east and west of the Sierran crest. This section is illustrated with 29 black and white photographs, of good quality, depicting various habitats and features of the area. Also provided are four line drawing maps, adapted from U.S. Geological Survey maps, of the study area. The study is supported by some 3,000 herbarium specimens collected by the author and deposited at JEPS and by "several thousand specimens representing the work of . . . collectors, ranging over a period of 112 years". These are located in four major San Francisco Bay Area herbaria.

The remainder of the flora consists of a catalogue of vascular plants arranged alphabetically by genera, which, in turn, are listed under families arranged in a modified Englerian sequence. For each taxon treated, the scientific name is followed by a common name, a statement concerning location and distribution, and a list of specimen citations together with their herbarium locations. Synonyms, as found in major West Coast floras, follow specimen citations, along with type locality information for taxa originally described from the area. Some of these type localities appear, however, to lie outside the area delimited by the author. In a few instances taxa are included on the basis of statements made by other workers, although the author has seen no specimens. Many comments and notes on various matters such distribution, distinguishing features, poisonous or edible qualities, etc., are added.

The text is relatively free of errors, and the print is easy to read. No keys or basic descriptions of taxa are given, however, making the work more of value as a reference than as a field guide.—KINGSLEY R. STERN, Department of Biological Sciences, California State University, Chico 95926.

A flora of the White Mountains, California and Nevada. By ROBERT M. LLOYD and RICHARD S. MITCHELL. viii + 202 pp., illustrated with nine black and white photographs and one map. University of California Press, Berkeley. 1973. \$8.00, buckram.

To many people the White Mountains, lying east of the southern end of the Sierra Nevada, are best known because of the old stands of bristlecone pine, *Pinus longaeva* Bailey. But there is much more there besides the pine: the White Mountains have been the site of much interesting ecological work and comprise an area of complex geology. The book contains a very good account of the vascular plants, a discussion of plant communities and vegetation (contributed by H. A. Mooney), a guide to the geology (contributed by V. C. LaMarche, Jr.), a history of botanical collecting, and a discussion of the plant geography and comparative floristics (written by the junior author).

In the section on plant communities, Mooney recognizes four major vegetation zones (desert scrub, pinyon woodland, subalpine forest, and alpine tundra) and discusses the more general features of each. Mitchell concludes (p. 35) that: ". . . the flora of the White Mountains presents the picture of a much depleted Pliocene flora surviving at mid-altitudes, superimposed by a northwestern flora at high altitudes, and encroached upon by warm-desert elements from below."

The White Mountains, some 2100 square kilometers in area and varying in elevation from about 1,220 to 4,342 meters, contain 76 families, 298 genera, and 811 specific and infraspecific taxa of vascular plants. The authors feel that their list is over 90 percent complete. The systematic section contains keys to families, genera, and species, distributional notes, localities, and specimen citations. It is unfortunate that specimens in a personal herbarium are cited. Editors of scholarly journals and books should insist that all cited material be in an established collection. We already

have enough cases of lost voucher material! Angiosperm families are arranged according to Cronquist's system of 1968 (*The evolution and classification of flowering plants*). Although much thought has gone into this phylogenetic sequence (which has stimulated even more thought), it seems pointless to this reviewer to arrange floras, especially local ones, which should be as easy to use as possible, according to one or another of the most recently proposed phylogenetic schemes. Why not stick to the "alphabets" we all know? One does not study local floras such as this generally excellent one to learn phylogeny.

The format is very pleasing and errors are few. One that will cause more amusement than confusion (p. 48) is the citation of Prof. LeRoy Abrams as the author of *Flora of the Pacific Northwest* instead of the *Illustrated flora of the Pacific States*.

One interesting aspect of this work is that it was done largely during the authors' spare time, during and after their graduate work at the University of California, Berkeley. This flora will be of great use to anyone dealing with the plants of the White Mountains and vicinity, and it is a distinct contribution to our understanding of the plant geography of California.—JOHN H. THOMAS, Department of Biological Sciences, Stanford University, Stanford, California 94305.

A flora of Southern California. By PHILIP A. MUNZ. viii + 1086 pp., map, 103 plates with some 600 figures. University of California Press, Berkeley. 1974. \$16.50.

No taxonomist has to be told why we need a new flora; but it is instructive to compare this one with the same author's *Manual of Southern California Botany*, published 39 years ago. The new book does cover the same plants, plus a few more; but how much more has been learned about them! (For just ten years' worth of additions and improvement, note the size of the supplement to Munz's *A California Flora*.) Yes, we need the new flora; and it is good that he finished it, even though he did not live to see it published.

Dr. Munz lived in southern California for about 55 years, first at Pomona College, where he became Professor of Botany and Dean of the Faculty, then, after an interim at the Bailey Hortorium of Cornell University, back at Rancho Santa Ana Botanic Garden, where he was Director until his retirement in 1960. He did extensive general collecting throughout California, but especially the southern part; and he was a steady and productive worker, turning out a series of books and monographs of high quality. He remained active beyond 80, as this new book clearly shows. And he was highly esteemed as a kind and gentle man, a good teacher, and a wise counselor.

The brief introduction to the book touches on the climate, vegetation, geology, and plant distribution in southern California—defined here as extending to Point Conception and Death Valley. The systematic treatment, according to the jacket blurb, covers more than 4000 species. Descriptions and keys are generally of the same scope and quality as those of *A California flora*, from which, in fact, they were largely taken—with necessary additions, subtractions, and improvements.

This book is most convenient for those who know the alphabet. Families are alphabetic under the main subdivisions and classes, which means mostly in two alphabetic sequences. Genera are alphabetic under families, species under genera, and, except for nominate taxa, subspecies and varieties under species. The family name heading the left-hand page and the generic on the right make finding easy, except that some of us may have to learn a few new family names—not Gramineae, for example, but Asteraceae, or whatever it is. The index also is alphabetic but might almost follow Dalla Torre and Harms, it is so nearly superfluous.

The specialist who knows one area or one family can always find details to criticize in a flora. (Perhaps we can criticize ourselves for not sending in those latest tidbits of information that must now await the next book.) However, it takes someone of broad knowledge to write a flora like this one: Dr. Munz was a specialist and monographer, yes; but he had breadth as well as depth.